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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/720,154	11/25/2003	Takuya Makino	245786US6	9634
22850	7590	06/28/2005	EXAMINER	
OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			DUONG, THO V	
			ART UNIT	PAPER NUMBER
			3743	

DATE MAILED: 06/28/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/720,154

Applicant(s)

MAKINO ET AL.

Examiner

Tho v. Duong

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 25 November 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 2/23/2004; 4/22/04.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### *Priority*

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

### *Drawings*

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the claimed subject matter of “a plurality of wick symmetrically arranged on a horizontal surface parallel to the axis” must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either “Replacement Sheet” or “New Sheet” pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

*Claim Rejections - 35 USC § 112*

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 2,4,5 and 6 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Regarding claims 2 and 4, the claimed subject matter of “wherein the fluid reaching the condenser via the vapor phase channel passes through and evaporates at a plurality of grooves formed on the wicks” is not supported in the disclosure. It appears in the disclosure that the fluid evaporates at the evaporator but not at the condenser. Furthermore, the claim subject matter of “a plurality of grooves formed on the wicks” is not supported by the disclosure because it appears in figure 8, that the grooves and the wicks are one component. Regarding claims 5 and 6, the claimed subject matter of “ a plurality of wick symmetrically arranged on a horizontal surface parallel to the axis” is not supported by the disclosure. Applicant disclose in figure 2a and on page 12 that the axis passes through area Z and is perpendicular to the page corresponds to the axis, the plurality of wick is symmetrically arranged on a horizontal surface (plane of the paper). It is clearly that the horizontal surface is not parallel with the axis.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

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Claims 3 and 7 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Regarding claim 7, there is an inconsistency between the language in the preamble and the body of the claim, thereby making the scope of the claim unclear. Applicant is required to clarify whether the claim is intended to be drawn to the subcombination or the combination, and amend the claim to be consistent with the intent.

Claim 3 recites the limitation "the plurality of grooves" in line 2. There is insufficient antecedent basis for this limitation in the claim.

Claims 1,3,7,8 and 9 are further rejected as can be best understood by the examiner.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1,3,7,8 and 9 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Bhatia et al. (US 5,933,323). Bhatia discloses (figures 2,3) an electronic apparatus comprising an evaporator for evaporating fluid in a liquid phase; a condenser having a plurality of wick wicks (302,303) for generating capillary force for refluxing the fluid; a liquid phase channel (liquid running inside of the wick 303) for circulating fluid in a liquid phase, the liquid phase channel connecting with both the evaporator and the condenser; a vapor phase channel (304) for circulating fluid in a vapor phase; the vapor

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phase channel connecting with both the evaporator and the condenser; the wicks (302,303) formed on the condenser are arranged symmetrically around the axis orthogonal to the direction of gravity wherein gravity is a downward direction (inside the paper) and the axis orthogonal to the gravity is the axis that divides the heat transport device in half (in the plane of paper of figure 3). Regarding claim 3, Bhatia further discloses (figure 3) that the wick structures (303) arranged in a radial pattern centered at a joint (301) of the liquid phase channel. Bhatia further discloses (column 3, lines 30-32) that the wick structure can be composed of grooves or wire mesh or any other porous material. Regarding claim 8, Bhatia discloses (column 3, lines 22-30) that the upper plate and the lower plate, which form the upper and lower boundary of the liquid and vapor channels, are made of copper or aluminum, which is known in the art to be a flexible material (See evidence 4,246,597, column 3, lines 37-39). Regarding claim 7, it has been held that a recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus satisfying the claimed structural limitation. *Ex parte Masham*, 2 USPQ2d 1647 (1987). In this instant application, the recitation that the claimed heat transport device is intended to use in an imaging apparatus does not differentiate the claimed heat transport device from the Bhatia's heat transport device satisfying the claimed structural limitations.

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Thomas (US 6,167,948) discloses a thin planar heat spreader.

Ghoshal (US 6,474,074) discloses an apparatus for dense chip package.

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Thomas (US 6,158,502) discloses a thin planar heat spreader.

Cole et al. (US 4,246,597) discloses flexible copper or aluminum material.

Swanson et al. (US 5,725,049) discloses a capillary pumped loop body heat exchanger.

Furukawa et al. (US 6,164,368) discloses a heat sink for portable electronic device.

Hou (US 6,889,756) discloses a high efficiency isothermal heat sink.

Cho et al. (US 2002/0157813A1) discloses a flat evaporator.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tho v. Duong whose telephone number is 571-272-4793. The examiner can normally be reached on M-F (first Friday off).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Henry Bennet can be reached on 571-272-4791. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Tho v Duong  
Primary Examiner  
Art Unit 3743



TD  
June 26, 2005